Amendment to the Specification:

On page 1, after the title and before the first line of the specification, please insert the subheading:

Background of the Invention

On page 1, please amend the second paragraph which spans lines 6-22 as follows:

Piston compressors on gas bearing are used, inter alia, in Stirling coolers, piston vacuum pumps, and other gas compressors. Supporting a piston on a gas bearing in a cylinder allows for a lubricant-free and low-resistance support of the piston in the cylinder. Such a piston compressor is ~~known from WO 96/ 15369~~ shown in US 6,016,738. For the support on a gas bearing, the piston compressor comprises a gas bearing arrangement having a compressed-gas accumulator which is connected with gas bearing nozzles and supplies the latter with compressed gas at overpressure. The compressed-gas accumulator is supplied with gas which is compressed by the piston in a cylinder pressure space when the piston is in a filling position, and which has a high gas pressure. To prevent the highly pressurized gas from flowing out of the compressed-gas accumulator back into the cylinder space when the piston is not in its filling position and there is a low pressure in the cylinder space, a mechanical check valve, e. g. a flatter valve, is provided in the compressed-gas supply line between the cylinder pressure space and the compressed-gas accumulator. Mechanical check valves display mechanical inertia, may get stuck or display leaks and are subject to wear.

On page 1, before the fourth paragraph, please insert the subheading:

Summary of the Invention

On page 2, please amend the first full paragraph spanning lines 13-17 as follows:

Preferably, the cylinder wall opening and/or the piston wall opening are con-figured as circular grooves. Thus, in the filling position of the piston, the cylinder wall opening and the piston wall opening are located opposite each other at each angle of rotation of the piston such that the piston ~~must~~ need not be guided in the cylinder with regard to its rotational position.

On page 4, please amend the first paragraph spanning lines 1-4 as follows:

According to a preferred embodiment, an anti-twist device is provided which prevents the piston from twisting in the cylinder. This is ~~required~~ provided in particular when a plurality of inlet valves are provided which are arranged relative to each other at certain fixed angles of rotation.

On page 5, please amend the first full paragraph which spans lines 11-22 as follows:

By means of the piston end-position control device a gas amount is fed from the control pressure accumulator into the cylinder pressure space when the piston is in a certain position other than the filling position or the end position. In this manner, the gas amount in the cylinder pressure space concerned is kept relatively constant. During the following compression of the gas in the cylinder pressure space, the piston end-position, which is determined by the gas pressure in the cylinder pressure space, is always at the same location. In this manner, control of the piston end-position of a free-swinging piston is realized, i.e. of a piston which is not mechanically coupled with a crankshaft or the like. The pneumatic piston end-position control device ~~must~~ need not necessarily be part of the piston compressor but may serve as an independent end-position control device for any type of piston-cylinder arrangement.

On page 6, please delete the second full paragraph in its entirety and add the following new paragraphs, subheading, and paragraph:

~~Hereunder several embodiments of the invention are explained in detail with reference to the drawings in which:~~

One advantage is high reliability.

Another advantage resides in a relatively low manufacturing cost.

Still further advantages of the present invention will be appreciated to those of ordinary skill in the art upon reading and understanding the following detailed description.

Brief Description of the Drawings

The invention may take form in various components and arrangements of components, and in various steps and arrangements of steps. The drawings are only for purposes of illustrating the preferred embodiments and are not to be construed as limiting the invention.

On page 7, before the first full paragraph which spans lines 16-18, please insert the subheading:

Detailed Description of the Preferred Embodiments

On page 7, please amend the paragraph spanning lines 20-22 as follows:

A first embodiment of a piston compressor 10 is shown in Figs. 1 and 2. The piston compressor 10 essentially ~~comprises~~ includes a piston 12 oscillating in a cylinder 14 between two end positions shown in Figs. 1 and 2, respectively.

On page 9, please amend the last paragraph beginning on line 20, as follows:

For operating the gas bearing, a gas pressure exceeding the ambient pressure is required in the compressed-gas accumulator 34. During a cycle, the ~~required~~ gas pressure is tapped from the cylinder pressure space 20 when the piston 12 is in its filling position shown in Fig. 1, the cylinder pressure space having, at this moment, a high gas pressure. In this position, the inlet valve 42 defined by the cylinder wall opening 22 and the piston wall opening 38 is open such that the highly pressurized gas can flow out of the cylinder pres-sure space 20 into the compressed-gas accumulator 34. When the piston 12 has left its filling position, the piston wall 40 is located opposite the cylinder wall opening 22, and the cylinder wall 24 is located opposite the piston wall opening 38 such that the inlet valve 42 is closed.

On page 11, please amend the first paragraph spanning lines 1-15 as follows:

All four inlet valves 142-148 are opened when the piston 112 is in its filling position shown in Fig. 3 and are closed when the piston 112 is in its non-filling position shown in Fig. 4 since the cylinder wall opening and the piston wall opening of the inlet valves 142-148 are not located opposite each other but are closed by the opposite piston wall and cylinder wall, respectively. By pro-viding a plurality of inlet valves 142-148 the so-called sealing length is in-creased, i. e. the length of the piston-cylinder gap between the piston wall opening and the cylinder wall opening of the same inlet valve. When four inlet valves 142-148 are provided, the sealing length is quadrupled such that the gas leakage flow is considerably reduced. This is ~~necessary~~ advantageous, in particular, in the case of a piston compressor with only a short piston stroke which, in turn, results in a short sealing length between the two wall openings of an inlet valve. Another section of the compressed-gas supply line 160 extends in the piston 112 between a third and fourth inlet valve 144,146.

On page 12, please amend the second full paragraph spanning lines 12-19 as follows:

The piston end-position control device shown in Figs. 7 and 8 serves for con-trolling the end position of the piston 312 in its filling position shown in Fig. 7. The filling position ~~must always be~~ is strictly maintained since this is the only way to ensure that the piston wall opening and the cylinder wall opening of an inlet valve are exactly aligned with each other, and that the inlet valve de-fined by the two openings has a sufficiently large opening cross-section and a sufficiently long opening duration to allow complete recharge of the piston compressor compressed-gas accumulator.

On page 15, after the last paragraph, please insert the following paragraph:

The invention has been described with reference to the preferred embodiments. Modifications and alterations may occur to others upon reading and understanding the preceding detailed description. It is intended that the invention be constructed as including all such modifications and alterations insofar as they come within the scope of the appended claims or the equivalents thereof.

On page 9, after the "claims" subheading, please insert the following paragraph as follows:

Having thus described the preferred embodiments, the invention is now claimed to be: